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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/718,912 | 11/21/2003 | Graham W. Ketley | CN 37416 | 2385 |
| 4249 | 7590 | 10/18/2006 | EXAMINER | |
| CAROL WILSON BP AMERICA INC. MAIL CODE 5 EAST 4101 WINFIELD ROAD WARRENVILLE, IL 60555 | | | SINGH, PREM C | |
| | | ART UNIT | PAPER NUMBER | |
| | | | 1764 | |
| DATE MAILED: 10/18/2006 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|---------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/718,912 | KETLEY ET AL. |
| | Examiner Prem C. Singh | Art Unit 1764 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 17 August 2006.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2 and 9-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2 and 9-12 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 21 November 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Response to Amendment

Amendment to claims 1, 2, 11 and 12 and cancellation of claims 3-8 is noted.

Terminal Disclaimer

The terminal disclaimer filed on 08/17/06 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of copending application No. 10/718,946 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Objections

Claim 1 is objected to because of the following informalities:

Claim 1(a) (lines 9 and 10) mention, “sulfur containing” and “nitrogen containing”.
While 1 (b) (lines 1 and 4) mention, “sulfur and/or nitrogen containing”.
Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcilly et al. (US 5,591,323).

The Marcilly reference discloses a process for reducing the sulfur content of a distillate feedstock. The process comprises contacting the hydrocarbon with air at oxidation conditions in the presence of a catalyst that comprises a group VIII metal such as cobalt and a basic support. The examples indicate that the treated feed has sulfur contents within the claimed range. The product would also inherently process a TAN as claimed because similar reactions are occurring in the process of Marcilly as compared to the claimed process. See column 2, lines 60-65; column 3, lines 10-17; and column 4, lines 33-54.

It is not clear from the teachings of Marcilly that oxidized sulfur compounds are separated from the distillate. The reference also does not disclose the nitrogen content of the treated feed.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marcilly by removing oxidized sulfur compounds because sulfur is undesirable in the final product. Likewise, since the same reaction as claimed is occurring in the Marcilly process, any nitrogen present in the feed of Marcilly would be oxidized and removed thereby producing a product having nitrogen concentrations similar to those claimed.

Claims 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcilly et al. (US 5,591,323) as applied to claim 1 above, and further in view of Arena et al. (US 5,286,372).

As discussed above, the Marcilly reference does not disclose that the support is magnesium or calcium oxide.

The Arena reference discloses the use of a catalyst that comprises magnesium or calcium oxide in a process for sweetening a hydrocarbon feed. See column 2, line 43 through column 3, line 8. The reference also discloses group VIII metal amounts within the claimed range. See column 5, lines 5-10.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Marcilly by using a catalyst having a support comprising magnesium or calcium oxide as well as group VIII metals in the amounts claimed as suggested by Arena because the use of such a catalyst results in appreciable conversion of mercaptans.

Response to Arguments

Applicant's arguments filed 08/17/2006 have been fully considered but they are not persuasive.

The Applicant argues that the specification demonstrated the efficacy of Applicant's novel invention to reduce nitrogen content in addition to non-mercaptans

sulfur content when carried out at temperatures well above 158°F, i.e., at 310 and 265°F.

The Applicant's argument is not persuasive because Marcilly and Arena use similar catalysts, similar feeds, and similar operating conditions as used by the Applicant. Although references do not specifically mention about nitrogen removal, it is expected that Marcilly and Arena inventions also remove nitrogen as claimed by the Applicant. The temperature restriction (well above 158°F, i.e., at 310 and 265°F) from the specifications can not be imported to the claim(s).

The Applicant argues that Marcilly catalyst degrades at temperatures above 158°F does not suggest even the first critical step of Applicant's novel process using a catalyst system that is robust at temperatures above 200°F and even to over 300°F.

The Applicant's argument is not persuasive because the above-mentioned criticality has not been claimed.

The Applicant argues that as reported in Table II, the process of the present invention achieved a shift in sulfur species to heavier sulfur species, in particular thiophenes and benzothiophenes to dibenzothiophenes, which would result in a desulfurization of about 90 percent achieving sulfur levels after the subsequent distillation step to below about 5 ppm.

The Applicant's argument is not persuasive because the above-mentioned mechanism of shift in sulfur species is not claimed.

The Applicant argues that the processes described by the references of record for removing mercaptans from petroleum cuts cannot be read to apply to conversions of thiophenes in a process for reducing the sulfur and nitrogen content of a distillate feedstock.

The Applicant's argument is not persuasive because the claims are drawn to, and the references teach, removal of sulfur compounds and not to conversion of thiophenes.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 6:30 AM-3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Calderola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS/092906



Prem C. Singh
Examiner
Art Unit 1764